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**(54) VARIABLE GAIN
AMPLIFIER****(57) Abstract:**

PURPOSE: To realize fault detection when a desired output level exceeds a threshold level by providing a detector to an output terminal of a variable gain amplifier and monitoring an output of a differential amplifier being an amplified output between the detected voltage and a gain control voltage so as not to exceed an upper limit and a lower limit threshold level.

CONSTITUTION: A detector 3 is provided to an output terminal 12, a difference between the detected voltage and a control voltage at a control input terminal 13 is amplified by a differential amplifier 5 and an output voltage of the differential amplifier 5 is monitored. A voltage comparator 6 is provided to the system, which detects a monitored output voltage is larger than a set upper limit threshold voltage. Moreover, a voltage comparator 7 is

provided to the system, which detects a monitored output voltage is smaller than a set lower limit threshold voltage. Thus, the voltage comparators 6,7 are provided to monitor the upper and lower threshold voltages thereby detecting a fault when the threshold voltage is exceeded.

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